

## 5.3 Interpreting and Sketching Graphs

### LESSON FOCUS

Describe a possible situation for a given graph and sketch a possible graph for a given situation.

### Make Connections

In math, a graph provides much information. This graph shows the depth of a scuba diver as a function of time.

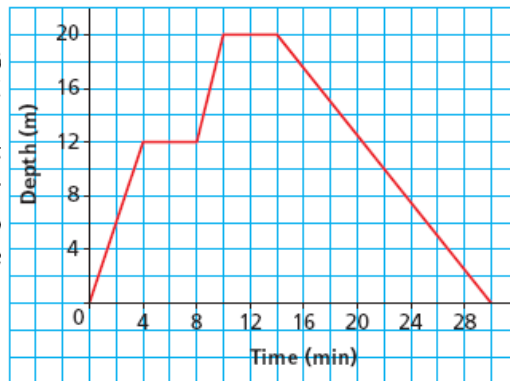
How many minutes did the dive last?

At what times did the diver stop her descent?

What was the greatest depth the diver reached?

For how many minutes was the diver at the greatest depth?

A Scuba Diver's Dive

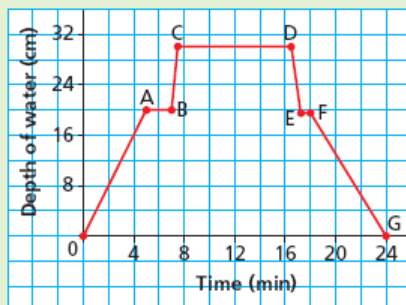


### TRY THIS

Work with a partner.  
You will need grid paper.

This graph shows the depth of water in a bathtub as a function of time.

Depth of Water in a Bathtub



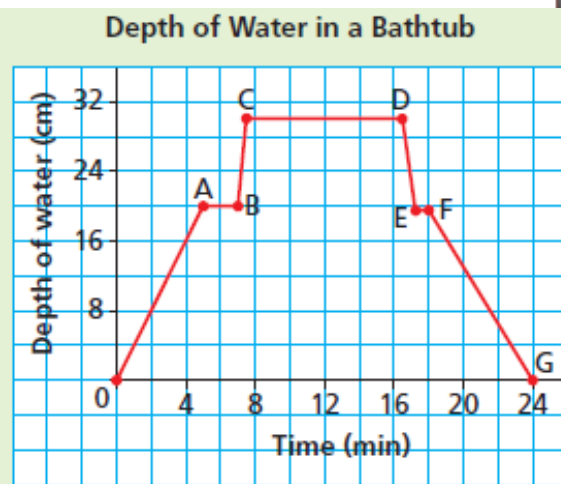
- A. What does each segment of the graph represent? Compare your description with that of your partner. Are both your stories the same? Should they be? Explain.

### TRY THIS (continued)

- B. Sketch a graph to represent this situation:
- You put the plug in the bath and turn on the taps.
  - You leave the bathroom and return to discover that the bath has overflowed.
  - You turn off the taps and pull out the plug to let out some water. You put the plug back in.
- C. Compare your graph with that of your partner. How are the graphs the same? How are they different?

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- What does segment OA represent?  
What does segment AB represent?  
What does segment BC represent?  
What does segment CD represent?  
What does segment DE represent?  
What does segment EF represent?  
What does segment FG represent?



Is the graph always described the same way? Should it be? Explain.

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Pg. 281 # 4, 6, 7, 9

Wednesday, November 16

- Warm-up
- Finish going over Section 5.3 interpreting and sketching graphs
- Practice Questions
- Go over yesterday's homework

Quiz on what we've done so far on Friday!

Please bring your graph paper to class for now on! You will need it for many of your upcoming classes.

# Warm-up # 6

#1 Answer the following questions for each relation:

- 3 a) (2,3) (5,4) (6,7) (1,4) (0,5)  
3 b) (5,2) (0,1) (9,7) (3,7) (0,5) (6,-1)

- Is it a function?  
-State the domain and the range.

#2 State which of the following would be the dependent variable

- 2 a) Brushing your teeth and cavities  
2 b) Hours worked and money earned

#3 Write  $T = 2b + 90$  in function notation and find the following:

- 4 a)  $T(3) = ?$   
b)  $T(b) = 100$

Ex: #14  
15

## Warm-up #

#1 Answer the following questions for each relation:

- 3 a) (2,3) (5,4) (6,7) (1,4) (0,5) ✓  $\rightarrow D = 0, 1, 2, 5, 6$   
3 b) (5,2) (0,1) (9,7) (3,7) (0,5) (6,-1) X  $D = 0, 3, 5, 6, 9$   $R = 3, 4, 5, 7$   
-Is it a function?  
-State the domain and the range.

#2 State which of the following would be the dependent variable

- 2 a) Brushing your teeth and cavities  
2 b) Hours worked and money earned

#3 Write  $T = 2b + 90$  in function notation and find the following:

- 2 a)  $T(3) = ?$   
2 b)  $T(b) = 100$   
a)  $T(b) = 2b + 90$   
 $T(3) = 2(3) + 90 \leftarrow$   
 $T(3) = 96$

b)  $T(b) = 2b + 90$   
 $100 = 2b + 90$   
 $-90$   
 $10 = 2b$   
 $\frac{10}{2} = \frac{2b}{2}$   
 $5 = b$

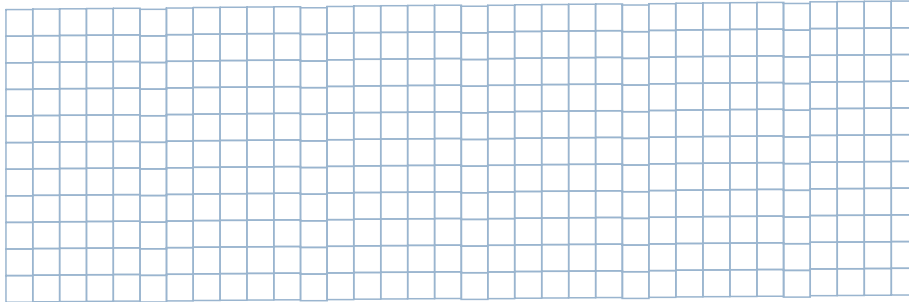
Sketch a graph to represent this situation:

You put the plug in the bath and turn on the taps.

You leave the bathroom and return to discover that the bath has overflowed.

You turn off the taps and pull out the plug to let out some water.

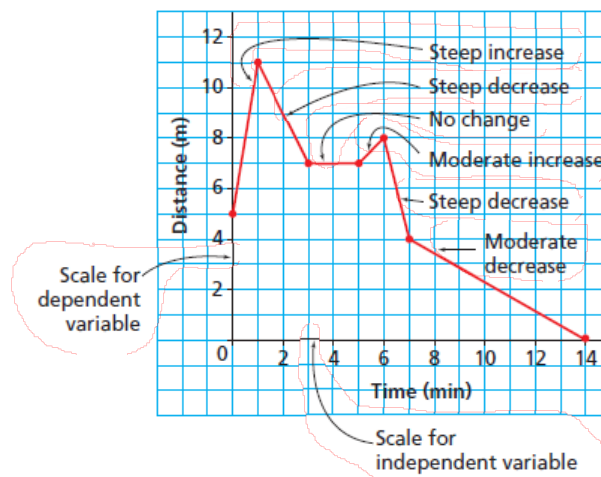
You put the plug back in.



How are the graphs the same? How are they different?

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The properties of a graph can provide information about a given situation.



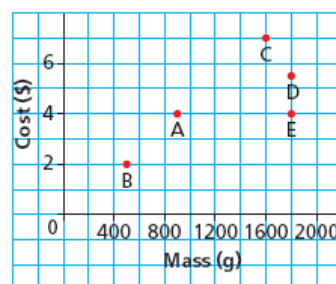
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## Example 1 Interpreting a Graph

Each point on this graph represents a bag of popping corn. Explain the answer to each question below.

- Which bag is the most expensive? What does it cost?
- Which bag has the least mass? What is this mass?
- Which bags have the same mass? What is this mass?
- Which bags cost the same? What is this cost?
- Which of bags C or D has the better value for money?

Costs and Masses of Various Bags of Popcorn



**SOLUTION**



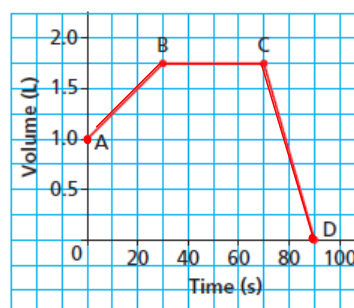
CHECK YOUR UNDERSTANDING



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The graph shows how the volume of water in a watering can changes over time.

Volume of Water in a Watering Can



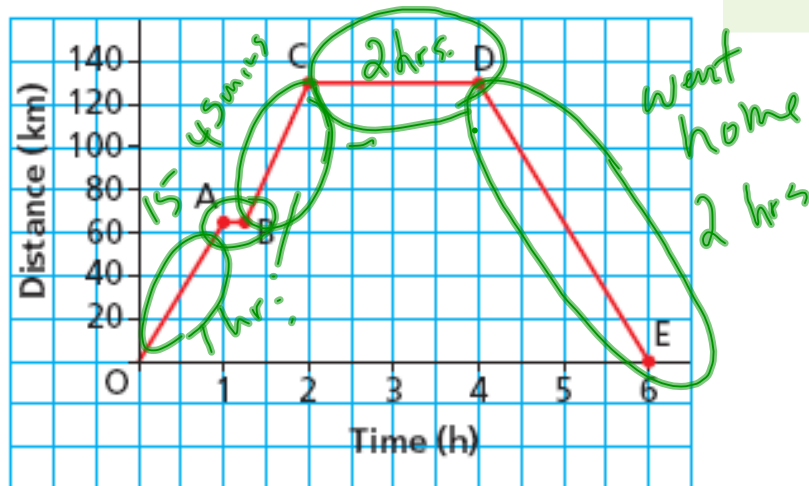
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**Example****Day Trip from Winnipeg to Winkler, Manitoba**

Describe the  
segment of

The distance  
Winnipeg to

✓ **SO**



CHECK YOUR UNDERSTANDING



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**Example 3****Sketching a Graph for a Given Situation**

Samuel went on a bicycle ride. He accelerated until he reached a speed of 20 km/h, then he cycled for 30 min at approximately 20 km/h. Samuel arrived at the bottom of a hill, and his speed decreased to approximately 5 km/h for 10 min as he cycled up the hill. He stopped at the top of the hill for 10 min.

Sketch a graph of speed as a function of time. Label each section of the graph, and explain what it represents.



CHECK YOUR UNDERSTANDING

✓ **SOLUTION**

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## Discuss the Ideas

1. For a graph of distance as a function of time, what does each segment represent?
  - a horizontal line segment
  - a segment that goes up to the right
  - a segment that goes down to the right
2. For a graph of speed as a function of time, what does each segment represent?
  - a horizontal line segment
  - a segment that goes up to the right
  - a segment that goes down to the right



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# Complete Practice Questions:

## Pg.281 #3 to 11

You may have already completed # 4,6,7,9